

REMARKS

The Examiner's Action mailed on August 8, 2006, has been received and its contents carefully considered.

In this Amendment, Applicants have amended claims 1 and 9. Claims 1, 9 and 14 are the independent claims, and claims 1-20 remain pending in the application. For at least the following reasons, it is submitted that this application is in condition for allowance.

Applicants thank the Examiner for allowing claims 14-20.

Claims 1-13 were rejected under 35 U.S.C. 103(a) as being obvious over Applicants' prior art FIG. 1 and 2 and 'Description of the Related Art' in view of *Grave* (U.S. 6,144,359), and further in view of *McCartney, Jr. et al.* (U.S. 5,831,693). This rejection is respectfully traversed.

The amended claim 1 recites:

1. A transreflective liquid crystal display device, comprising:
 - a display panel having a viewing area, wherein the viewing area comprises a transmissive region and a reflective region;
 - a backlight device disposed under the display panel, wherein the backlight device provides a backlight passing through the transmissive region;
 - a power management controller connected with the backlight device, wherein the power management controller controls an intensity of the backlight; and

at least one photodetector located on the display panel outside the viewing area, wherein the photodetector detects an intensity of ambient light around the display panel, and then provides a corresponding signal to the power management controller to control the intensity of the backlight;

wherein, by the power management controller based on the corresponding signal, the intensity of the backlight automatically becomes greater when the intensity of the ambient light becomes lower, and the intensity of the backlight automatically becomes lower when the intensity of the ambient light becomes greater, *maintaining a total amount of light at a desired level, said total amount consisting of a first part of ambient light reflected from the reflective region and a second part of the backlight passing through the transmissive region.*

(Emphasis Added)

Support for the amendment of claims 1 and 9 can be found in page 10, lines 7-14 of the specification.

As is apparent from the above description, The transreflective LCD device of the present invention can self-adjust the backlight intensity to provide optimum (or stable) display based on the availability and intensity ambient light. That is, *the total amount of reflected and transmitted light can be maintained at a desired level*, thereby achieving self-adjusting display brightness, and reducing power consumption.

(emphasis added)

It is clear that in the transreflective liquid crystal display device according to amended claim 1 the power management controller controls the intensity of the backlight, based on the corresponding signal, so that the intensity of the backlight automatically becomes greater when the intensity of the ambient light becomes lower, and the intensity of the backlight automatically becomes lower when the intensity of the ambient light becomes greater, *while the total amount of reflected and transmitted light is maintained at a desired level.*

In page 3 of the Office Action, the Examiner asserts that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the power management controller as taught by Grave in the system of AAPA...."

Referring to Col. 4, lines 25-33, Grave discloses:

Transreflective-type display device 100 provides a number of advantages over conventional transreflective display devices. For example, the luminance levels necessary to achieve a desired contrast under a variety of ambient light conditions is significantly easier to achieve. Further, since approximately 85 percent of light from backlight 130 can be transmitted by transreflector 120 during night mode operations, *power consumption by backlight 130 in the night mode is significantly reduced.*

It is clear that Grave teaches controlling a backlight to reduce power consumption. Grave, however, does not teach or suggest "wherein, by the power management controller based on the corresponding signal, the intensity of the backlight automatically becomes greater when the intensity of the ambient light

becomes lower, and the intensity of the backlight automatically becomes lower when the intensity of the ambient light becomes greater, *maintaining a total amount of light at a desired level, said total amount consisting of a first part of ambient light reflected from the reflective region and a second part of the backlight passing through the transmissive region*" as recited in amended claim 1.

MPEP 2142 reads in part:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In connection with the third criteria, MPEP 2143.03 goes on the state:

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Applicants' Related Art and *McCartney, Jr. et al.* also fail to supply this deficiency, and Applicants therefore submit that whether taken separately or in combination, Applicants' prior art FIG. 1 and 2 and 'Description of the Related Art', *Grave and McCartney, Jr. et al.* fail to teach or suggest all of the limitations recited in amended claim 1. For at least this reason, amended claim 1 is allowable over

the cited references. Reconsideration of this rejection is hereby respectfully requested.

The amended claim 9 recites:

9. A method of fabricating a transflective liquid crystal display device, comprising the steps of:

providing a first substrate having a viewing area and a peripheral area, wherein the viewing area comprises a transmissive region and a reflective region;

disposing a backlight device under the first substrate, wherein the backlight device provides a backlight passing through the transmissive region;

providing a power management controller connected with the backlight device, wherein the power management controller controls an intensity of the backlight; and

forming at least one photodetector on the first substrate in the peripheral area, wherein the photodetector detects an intensity of ambient light above the first substrate, and then provides a corresponding signal to the power management controller to control the intensity of the backlight;

wherein, by the power management controller based on the corresponding signal, the intensity of the backlight automatically becomes greater when the intensity of the ambient light becomes

lower, and the intensity of the backlight automatically becomes lower when the intensity of the ambient light becomes greater, *maintaining a total amount of light at a desired level, said total amount consisting of a first part of ambient light reflected from the reflective region and a second part of the backlight passing through the transmissive region.*

(Emphasis Added)

It is clear that according to the method of amended claim 9, under control of the power management controller and based on the corresponding signal, the intensity of the backlight automatically becomes greater when the intensity of the ambient light becomes lower, and the intensity of the backlight automatically becomes lower when the intensity of the ambient light becomes greater, *while the total amount of reflected and transmitted light is maintained at a desired level.*

As described above in relation to claim 1, Applicants' prior art FIG. 1 and 2 and 'Description of the Related Art', Grave and McCartney, Jr. et al. fail to teach or suggest "wherein, by the power management controller based on the corresponding signal, the intensity of the backlight automatically becomes greater when the intensity of the ambient light becomes lower, and the intensity of the backlight automatically becomes lower when the intensity of the ambient light becomes greater, *maintaining a total amount of light at a desired level, said total*

amount consisting of a first part of ambient light reflected from the reflective region and a second part of the backlight passing through the transmissive region" as recited in amended claim 9.

Applicants' Related Art and *McCartney, Jr. et al.* also fail to supply this deficiency, and Applicants therefore submit that whether taken separately or in combination, Applicants' prior art FIG. 1 and 2 and 'Description of the Related Art', *Grave and McCartney, Jr. et al.* fail to teach or suggest all of the limitations recited in amended claim 9. For at least this reason, amended claim 9 is allowable over the cited reference. Reconsideration of this rejection is hereby respectfully requested.

The Office Action alleges that Applicants' FIG. 1 and 2, and the corresponding 'Description of the Related Art', teach "A transreflective liquid crystal display device, comprising: a display panel having a viewing area, wherein the viewing area comprises a transmissive region and a reflective region; a backlight device disposed under the display panel, wherein the backlight device provides a backlight passing through the transmissive region" as recited in independent apparatus claim 1, and that *Grave* teaches the remaining elements of claim 1 as filed, except that the Office Action admits that *Grave* does not disclose "at least one photodetector located on the display panel outside the viewing area", and relies upon *McCartney, Jr. et al.* to supply that deficiency. Independent method claim 9 is not addressed separately in the Office Action.

However, neither Applicants' prior art FIG. 1 and 2 and 'Description of the Related Art', nor *Grave*, nor *McCartney, Jr. et al.*, teach or suggest "wherein, by the power management controller based on the corresponding signal, the intensity of the backlight automatically becomes greater when the intensity of the ambient light becomes lower, and the intensity of the backlight automatically becomes lower when the intensity of the ambient light becomes greater, *maintaining a total amount of light at a desired level, said total amount consisting of a first part of ambient light reflected from the reflective region and a second part of the backlight passing through the transmissive region*" as recited in amended claims 1 and 9.

Claims 1 and 9 are independent claims, from which claims 2-8 and 10-13 respectively depend. Amended claims 1 and 9 are patentable for the reasons discussed, and therefore for at least the same reasons claims 2-8 and 10-13 are patentable.

It is submitted that this application is in condition for allowance. Such action and the passing of this case to issue are requested.

Should the Examiner feel that a conference would help to expedite the prosecution of this application, the Examiner is hereby invited to contact the undersigned counsel to arrange for such an interview.

Should any fee be required, however, the Commissioner is hereby authorized to charge the fee to our Deposit Account No. 18-0002, and advise us accordingly.

Respectfully submitted,



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Date

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AMENDMENT

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